DOCUMENT RESUME

ED 243 527 JC 840 200

AUTHOR Wallace, Mark L.
TITLE The 1983 Coalinga Earthquakes and West Hills Community College: In Thirty Seconds You Can Lose Everything. Management Report, 1984-4/3.
INSTITUTION Association of California Community Coll. Administrators.
PUB DATE 3 Apr 84
NOTE 18p.
PUB TYPE Reports - Descriptive (141) -- Viewpoints (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Planning; Community Colleges; *Earthquakes; Educational Facilities; Educational Facilities Improvement; *Emergency Programs; *School Safety; Two Year Colleges
IDENTIFIERS *West Hills Community College CA

ABSTRACT

On May 2, 1983, Coalinga, California was rocked by an earthquake measuring 6.7 on the Richter Scale. Since May, the Coalinga region has endured 8 aftershocks at 5.0 or larger on the Richter Scale, 30 shocks at 4.0 or larger, over 300 shocks at 3.0 or larger, and over 4,000 shocks at 2.0 and larger. From all known data on the faults of the region, it was generally believed prior to May 2 that Coalinga would not suffer from a large earthquake. Local damage resulting from the earthquake and aftershocks amounted to around $31 million, with an estimated $1.7 million in damages occurring on the West Hills Community College (WHCC) campus. The college's theatre, pools, gymnasium, chemistry lab, and several other facilities suffered damages. In some areas, problems could have been prevented and the college is taking steps to forestall future damage. WHCC learned several valuable lessons about disaster preparedness as the result of the earthquake, including the following: (1) chemicals must be stored in secure facilities; (2) maintenance personnel should know the location of chemical storage sites and the nature of the chemicals stored; (3) all buildings should be up to current codes; (4) maintenance staff should know the location of electric generators, and gas, electricity, and water shutoffs; (5) evacuation plans and drills should be conducted in dormitories; and (6) the college should play a major role in community recovery efforts. (LAL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED243527

Management Report

1984 - 4/3

THE 1983 COALINGA EARTHQUAKES AND WEST HILLS COMMUNITY COLLEGE:
In Thirty Seconds You Can Lose Everything

by

MARK L. WALLACE

Coordinator, Information and Community Services

West Hills Community College

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

M. L. Wallace

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

JC 840 200

ACCCA Your Professional Association

Association of California Community College Administrators

FOREWORD

The Coalinga Earthquake of last Spring was felt far beyond the geographic area it affected and in quite a different sense. Those of us with managerial responsibilities at other California Community Colleges were well aware that what happened at Coalinga could easily have happened on our own campuses. For all of us, it raised critical questions regarding the state of disaster preparedness at our own institutions and our ability to cope with the after effects of such disasters.

Over the past year, key personnel at West Hills College have necessarily become "instant experts" of a kind--sharing their hard-earned experience of earthquake and aftershocks with audiences from throughout the State. In the following Management Report, Mark Wallace, Public Information Officer at the College, recounts those events that rocked Coalinga last May, enumerates the effect of the quake(s), and recalls the role the College played not only on campus but in the larger community.

Ray Liedlich
Columbia College

ABOUT THE AUTHOR

Mark L. Wallace is the Coordinator for Information and Community Services at West Hills College. He previously worked for the San Leandro Unified School District in drug abuse and alcoholism counseling and program management. He completed his B.A. degree in Journalism at California State University, Fresno and served as an intern in public relations for a public radio station in Fresno. This is Mark's fourth year in his current position at West Hills College.

West Hills Community College is located in the City of Coalinga. The college district includes just over 5,000 square miles of the western side of the San Joaquin Valley. Population in the district is approximately 68,000 with fifteen rural communities. The population of Coalinga is 7,000. The main campus is located on a forty acre site with an adjoining 208 acre farm facility.

On May 2, 1983 at 4:43 pm Coalinga and the surrounding oil fields were rocked by a 6.7 Richter Scale earthquake. The ground motion lasted 28.5 seconds on this, the third largest earthquake in recorded California history. Shock waves were felt in the Los Angeles basin and north to Sacramento and the San Francisco Bay Area and generally throughout California. Ten minutes after the first shock was the first in a series of major aftershocks at 5.4 on the Richter Scale.

Since May the Coalinga region has endured eight aftershocks at 5.0 or larger on the Richter Scale, thirty shocks at 4.0 or larger, over 300 shocks at 3.0 or larger and over 4,000 shocks at 2.0 and larger. The region was known to be seismically active prior to May 2. Occassional earthquakes, usually small, rolled through the region attributed to known faults and even the San Andreas Fault which is twenty miles west of Coalinga. From all the known data on the faults in the region, it was generally believed prior to May 2 that

Coalinga would not suffer from a large earthquake.

Of the aftershocks, four are worth some discussion here. On Friday, June 10 at 8:22 pm a 5.2 shock rolled for almost thirty seconds. An ancient fault was broken by the shock with the first and only sign of earthquake fault surface breakage in the region. An aftershock generated on the Coalinga Anticline Fault, the newly named underground fault that slipped on May 2, sent its energy up the ancient fault as the two intersected deep under the Coalinga region. The ground broke and a trace line was found along with a road break in Los Gatos Canyon, twelve kilometers out of Coalinga. This ancient fault was re-activated by an aftershock. It was a rolling shock and little damage resulted in Coalinga. Canyon residents were hit hard and suffered some damages.

On July 22 during the evening hours two major shocks, a 5.9 followed by a 5.0, rolled through the region and on Monday, July 25 a 5.1 shock hit town as a very sharp, single jolt. The rate of acceleration on the July 25 shock was measured at seventy percent of gravity with a very short duration. It felt as if the whole town had been picked up and dropped.

Dr. E. J. Fowkes, geology instructor at West Hills College explains the Coalinga Anticline Fault as a deep fault running NW to SE for 40 kilometers in an area 20 kilometers wide. The May 2 hypocenter, where the quake took place underground, was at a depth of 8.5 kilometers. During this aftershock episode hypocenters have been placed at the surface and down to a

depth of 15 kilometers.

It is important to understand the nature of major earthquakes. Dr. Fowkes stresses the importance of understanding aftershocks. He says aftershocks will not exceed a main earthquake in almost all cases. If there is an exception, in one per cent of all cases, it will occur within one or two days of the main shock. Aftershocks will continue in the Coalinga region until next summer and it is predicted by seismologists at U.C. Berkeley that seismic activity will be abnormal for the next two to five years. We are hoping that our episode of major aftershocks may now be over.

I offer this data to illustrate the intensity of our experience. A major earthquake is a psychological and physiological shock. It is a disaster that continues to haunt and even terrorize and in our case the damages continued to compound during the first four months after May 2.

THE DAMAGES

Twenty-five percent of the homes in Coalinga were rendered uninhabitable and seventy percent of the homes in town were damaged. Eight square blocks of the central business district were destroyed. The district hospital sustained damage leaving only the emergency room functioning. The Highway Patrol building had to be abandoned. A rural fire station was destroyed. The city fire station is still in doubt. The local schools sustained serious damages to underground piping and some structural damage in older facilities. And the list goes on,

the bottom line is $31 million.

Damages to West Hills College were first estimated by the President's Office at $1.7 million. The college campus opened in 1959 with the theatre building opening in 1965. The newest permanent structure on the main campus is the South Hall dormitory. The new single story dorm was occupied last fall semester after a year of construction. It replaces the former structure which was completely destroyed by fire in February 1982. All construction on campus is up to all state and local codes, and it was before the earthquake.

Damages to the college facilities:

1) The theatre - the suspended ceiling over the seating area and orchestra pit suffered severe damage. The ceiling moved, or swung in place battering against the concrete walls of the building resulting in plaster damage throughout the ceiling. Three trusses supporting the ceiling and roof and connecting the walls suffered breakage at three of the six ends.

The building was closed and a wide area around the building was roped off. The initial fear was that a sizeable aftershock might cause the east wall to fall. Emergency repairs were made and paid by the original contractor after negotiations with the architects and the college administration. It was determined that four extra column ties around the bolts anchoring the trusses were left out of the original construction even though the original drawings called for them.

It should be noted that the college was about to open a play on the stage. The sets, built of wood framed muslin to a height of twelve feet, were flexible enough and remained standing until this fall. Lighting instruments were shaken out of aim, none fell and all had safety lines attached. The fly-gallery remained intact with only two weight assemblies out of their tracks. The house sound system suffered from broken circuitry damage. The Steinway grand piano took a severe bouncing on stage and required extensive retuning. Technically, the theatre did much better than it did structurally.

2) The pools - competition and diving pools are closed now. The competition pool settled over one inch on the deep end causing a change in the water line and making the skimmers minimally effective. The diving pool lost water at a rate of approximately 3,000 gallons a day. The estimated damages to the pools is $300,000.

The competition pool was open for the summer for public swimming and lasted until mid-August. The pools moved against their plumbing connections and many of the connections broke. Chlorine leaked from the cylinder connections and the filter system failed. At this writing, there is a strong probability that the college pools will not be repaired leaving the town without public pools this summer.

3) Gymnasium - steel reinforced concrete walls suffered some

cracking. A high pressure epoxy was used to repair the walls. Basketball backboard assemblies shifted severely. The floor took a beating as the gym was used a relief center, for emergency housing, as a barracks for the National Guard and the Conservation Corps and finally as a shopping center for displaced merchants over the summer.

4) Chemistry Lab - this facility was a serious problem in the hours immediately following the earthquake. The lab went to the floor, chemicals mixed and reacted. Gasses escaped through roof vents. Our concern was that the room was simply out of control. We even considered evacuating the entire campus including the disaster relief center that was being set up in the gym.

5) Random Others - false ceiling (T bar), light fixtures and insulation fell in almost every classroom, including some repeat damages after aftershocks. Large plate glass windows broke in several buildings. The library, 45,000 volumes went to the floor on May 2 and July 25. Other aftershocks took only selected volumes. Our shelves are wired now. The library suffered some structural damage along the east wall at the roof line. Shelving took a beating as whole sections were moved. Our Hewlett-Packard 3000 Series III computer lost power when the town went off. The systems manager secured the system. The two CPU's did not move even though they are free standing.

The two disk drives walked away from their wall positions. Two days later the system came alive, no worse for the wear. Underground pipes, particularly water lines, suffered the most damage. Prior to 1972 Coalinga drew its water from an underground supply. The water was very hard and took its toll on piping all over town. We are still getting water line breaks. Gas and sewer lines faired well.

So that is a general list of the damages. Some of the damage in some of the areas could have been prevented and we are continuing to take steps to prevent further damage.

THE LESSONS WE LEARNED

In a report titled "Performance of the Public School Buildings to the 1983 Coalinga, California Earthquake," author John F. Meehan, Principal Structural Engineer, Research Director, Structural Safety Section of the Office of the State Architect, includes the following regarding the Field Act.

"It is also apparent from the nominal amount of damage experienced by the building standards for public schools are not overly conservative. One gets the impression from considering the cracks produced in the brittle finish materials as a result of the movement of the more flexible seismic resisting structual systems, that the structural systems were stressed well into the working range. Further, it appeared evident that the more stringent drift requirements and other damage control criteria added to the State Building Standards after the Kern

County earthquakes of 1952 and the San Fernando earthquake of 1971 were justified when one views the very hazardous window glass breakage, the suspended plaster ceilings and T bar accoustic ceilings. This type of nonstructural damage was not only potentially hazardous to the occupants, but it represented a costly property loss to the school districts."

Meehan's detailed report on school building damages is included in "The 1983 Coalinga, California Earthquakes," Special Publication #66 of the California Department of Conservation, Division of Mines and Geology. The Division ran a scientific clearinghouse directed by State Geologist James F. Davis on our campus May 3 through May 8 where the scientific community share information on the earthquake and its toll in the region.

Jack C. Smith, Director of Maintenance at West Hills College, offers the following list of concerns dealing with disaster preparedness.

Chemical storage in classrooms, labs, maintenance facilities, in printing shops and agricultural shops must all be accomplished in secure facilities. Chemicals in containers move. Quality containgers in closed shelving units anchored to walls are recommended. Your local fire department safety inspectors can be a valuable resource in recommending proper facilities for chemical storage. It is also important to consider the reactability of chemicals stored together. The old chemistry lab style of storing chemicals alphabetically on shelves has

tragic consequences. Our chemistry instructor suspected ammonia and ammonium hydroxide gasses being vented from the lab. Fortunately, there was no cyanide gas present.

Maintenance personnel must know the location of all chemical storage sites on campus as well as the nature of the chemicals stored. Maintenance and administrative personnel must know where the local chemical waste/clean up companies are and how to contact them in the event of an emergency. It may be worth an informal contact now in preparation for an emergency to establish what kinds of services are available.

It is important that all campus buildings be up to current codes. In large facilities, it may be worth dedicating some man hours to examining earthquake damage prevention structures to determine if indeed these structures are in place and that they meet original design specifications or if they need updating. This may be important in facilities that would be used in the event of a disaster.

The location of electrical transformers is worth condideration. When located in basements that can flood, transformers and electrical panel boxes are useless and will not function when power is restored. When electrical service is out it may be necessary to install portable generators into facilities used for disaster relief. Maintenance staff should know where generators can be found in the community and how they can effectively be hooked into existing electrical wiring. Keep in

mind your investment in your dining hall freezers and refrigerators.

Maintenance and administrative staff should know where gas, electricity and water shutoffs are and how to operate them, building by building and campus wide.

Hanging and standing tanks of every kind need to be braced. Audio-visual equipment on rolling carts survived without mishap even after a self-propelled tour of their storage facility. Automobiles on axle stands fell in the auto and diesel shops. We use wooden blocks now.

PEOPLE

If you have dormitories you want to account for all of the residents. Evacuation plans and drills are a must. Your student services personnel must know their living facilities inside and out. After a disaster an immediate check of all facilities is a must, looking for people and potential hazards created by the disaster. We had doors on two dorm rooms jammed shut as the building settled, second floor doors. Fortunately, the residents were not in their rooms. College staff are a valuable resource. They need accurate information on the disaster and how to proceed in recovery efforts at work and at home. In the case of an earthquake, they need to know about aftershocks.

On recovery efforts Superintendent/President Joseph M. Conte offered these words in a speech before college admini-

strators last fall. "The role of the community college in the community at the time of disastser is one which caused some tension between the faculty and adminitration. First, insisted that the college resume normal operations as soon as it was possible to safely resume classes. The earthquake hit at 4:43 pm on Monday, May 2. We resumed classes at 8:00 am on Monday, May 9."

Conte added that the college is a major community resource and that the college would play a major role in the recovery efforts and in normalizing Coalinga. "We therefore established West Hills College as the disaster aid center for Coalinga." It is worth noting here that the fast response of the Office of the State Architect and the Fresno County Building Inspectors played a big part in getting us back on line as a disaster relief center and as a college the week following the earthquake.

THE BOTTOM LINE

An accounting of our losses to date is estimated by Ken Fite, Vice President of Business Services to be just over $467,000. This includes an estimated $300,000 for the repairs of the college pools. The college opened this year with a $14,000 contingency fund for a $5.4 million budget. Out-of-pocket expenses to date for earthquake recovery are between $110,000 and $100,000 with the impact being felt in both the 82-83 and 83-84 fiscal years.

Community colleges qualify for disaster aid from the

Federal Emergency Management Agency (FEMA). The formula for recovery is up to seventy-five percent Federal dollars matched by twenty-five percent non-Federal institutional dollars. To date, according to Fite, the college has qualified for $59,000 in FEMA reimbursement.

Fite adds that you should prepare for the lack of aid available for community colleges after a disaster. "You will not be better off or even equal to where you were before a disaster." Fite also warns that relief agencies are not interested in speedy repairs to college facilities. District contingency funds under recent attack from the State Legislature are your best and maybe only resource for financial recovery from a disaster and these funds should be maintained at adequate levels.

West Hills College facilities are valued at approximately $20 million. Earthquake insurance with a limit of $10 million, a $50,000 deductible and a $10,000 premium was available to the college and still is. The college did not have and still does not have earthquake insurance. Earthquake insurance versus adequate contingency funds is clearly an economic issue that needs to be studied on a case by case basis.

AND FINALLY...

In his address Conte adds this, "My final bit of advice to you is that you should have someone on staff who stays abreast of State and Federal disaster assistance programs and

that you maintain positive relations with your Federal legislators and their staff personnel, for it is your Congressman who is going to be the single most helpful resource in your recovery."

A personal note. This is the single most stressful event I have ever had to deal with. Long hours of work turned into days without end. Little sleep, none for the first three days, coupled with no creature comforts like a hot shower, and intensity of the whole situation made life here very difficult. Communications with the outside, even to get a perspective of just what had happened to us, were very sketchy. A group of us stood outside our homes just after the first shock, we wondered if indeed the "big quake" had finally hit San Francisco or Los Angeles. Six hours after the main shock, an editor friend from Tulare arrived and allowed me my first opportunity for a clear understanding of just what had happened to Coalinga.

Early on Tuesday May 3, the State Geologist arrived on campus looking for a space for a scientific clearinghouse. As public information officer and facilities manager I saw the need for accurate information and arranged for a classroom/ lecture hall for the clearinghouse activities. Simply stated, knowledge is power.

Special thanks to the following persons for their help in the preparation of this article: Kenneth W. Fite, Vice President, Business Services, Dr. E. J. Fowkes, Instructor of Geology and Physical Science, Jack C. Smith, Director of Maintenance, and Robert Semple, Public Information Officer, City of Coalinga.

Meehan, John F., "Performance of the Public School Buildings to the 1983 Coalinga, California Earthquake," The 1983 Coalinga Earthquakes, Special Publication #66, California Department of Conservation, Division of Mines and Geology, Sacramento, pp. 37 to 54.

Some statistical data gathered from The Fresno Bee, issues dating May 3 to May 8, 1983. Special series on the Coalinga earthquake.

ERIC® CLEARINGHOUSE FOR JUNIOR COLLEGES
UNIVERSITY OF CALIFORNIA

JUN 1 1984

8118 Math-Sciences Building
Los Angeles, California 90024